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RoMPS Final Technical Review

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SpARC
Space Automation
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Prepared for:

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Executive Summary

This report focuses on the last reporting period. The period of performance began with intensive preparations for the Critical Design Review held in Dec '92, continued with numerous internal prefabrication reviews and release of PO's for artwork, and concluded with the receipt of circuit board artwork and hitchhiker interfaces to SCL in Mar '93.

Overall, the ROMPS control system has made signficant contributions in the areas of; a) autonomous experiment control, b) user friendly robotic control, c) modular architectures, d) reusable software, and e) technology transfer. Equally important is that the outcome of our research and development has met the administrators goals for faster and better.

The CCDS' ability to work in partnership with industry significantly reduced the cost, and increased the utility of the ROMPS' control system. The CCDS program creates direct avenues for rapid commercialiation of the process (processing) or underlying technologies. This project in conjunction with others at the SpARC CCDS has created new commercial products or product upgrades. The developers of SCL now have Macintosh and 80x86 compatible kernels. SCL also has COMET and Hitchhiker compatible drivers. The developers of Easylab will soon have an upgraded automation system (80188 to 80386).

Accomplishments - Final Period

All planned goals, milestones and tasks were completed with one exception. Due to late delivery to ERIM of some externally developed software, we were unable to perform one of the planned end-end tests. [We were able to verify that software in-house at a later date.]

We also accomplished supplemental unplanned tasks at GSFC's request. We developed a model of the servo loop using MATLAB and ran various simulations to determine initial settings for gains, etc.

- Critical Design Review
- Final Designs
  - Electronics, XP, SCL, Robot Module, Furnace Module, Harness
  - Thermal, Mechanical
- Receipt of SCL & interfaces to Labview software
  - As licensed from Interface & Control Systems
- On-site support of SCL installation
- Receipt of EasyLab & Robot & XP software
  - As licensed from Zymark
- Development and analysis of MatLab servo simulation model
- Verification of EasyLab® software port
- Design Release
  - Mechanical
  - Electrical
  - Crcuit board files
- Fabrication Release
  - Circuit board artwork
- Receipt of circuit board artwork

Incremental Deliverables [Completed]

- Critical Design Review presentation package & on-site support
- Critial Design Review technical voumes I, II & III
- MatLab simulation model
- Detailed Design Documentation
  - Design release notices
  - Redlined icd's
  - Command list
  - Telemetry list
  - Electrical schematics
  - Interconnect diagram
  - Matlab servo simulation results
  - Mechanical drawings
  - Thermal design and analysis results

Summary of Prior Deliverables [Completed]

- Preliminary Design Review presentation package & on-site support
- Preliminary Design Review technical volumes I & II
- Interim Review presentation package & on-site support
- Conceptual Design Review presentaion package & on-site support